AMENDMENTS TO THE CLAIMS

This listing of claims will replace all prior versions and listings of claims in the

application:

LISTING OF CLAIMS:

1.   (currently amended) A space cross-connect unit (Z) with N input ports (E_i) and P

output ports (S_i), comprising:

a broadcast stage comprising at most N signal dividers (A_i) each having one input and C

outputs where C is an integer factor of P less than P, each input being connected to one of said N

input ports (E_i) so that each of said at most N dividers (A_i) divides a signal received at one of

said N input ports (E_i) into C signals at said C outputs, and

a space switching stage comprising at most C space switching modules (B_i, B'_i),

said space cross-connect unit is characterized in that:

the space switching modules (B_i, B'_i) are non-blocking and non-broadcasting, and

each of said space switching modules (B_i, B'_i) has N inputs and P/C outputs, said N

inputs are connected to N outputs of said broadcast stage, each of said N outputs comes from a

different divider (A_i) of said at most N dividers, and each of said P/C outputs of said space

switching modules (B_i, B'_i) is connected to a respective one of said P output ports (S_i), wherein

said space cross-connect unit is ~~configured for~~ operable to perform packet switching and circuit

switching, and wherein said space cross-connect unit is adapted to provide broadcasting of input

signals to said output ports (S_i) independently of spectral considerations.

2.   (Original) A cross-connect unit (Z) according to claim 1, comprising exactly N

dividers (A_i) and C modules (B_i, B'_i).

3.   (previously presented) A cross-connect unit (Z) according to claim 1,

characterized in that each of said space switching modules (B_i, B'_i) comprises means for

connecting each of its N inputs to one of its P/C outputs.

4.   (Previously presented) A cross-connect unit (Z) according to claim 1,

characterized in that each of said space switching modules (B_i, B'_i) is a non-blocking switching

matrix (B_i) with N inputs and P/C outputs.

5.   (Previously presented) A cross-connect unit (Z) according to claim 1,

characterized in that each of said space switching modules (B'_i) comprises:

K non-blocking switching matrices (F_i) with N/K inputs and P/C outputs, where K is an

integer factor of N; and

P/C non-blocking switching matrices (G_i) with K inputs and one output, each of said K

inputs being connected to a respective output of each of said K switches (Fi).

6.   (Previously presented) A cross-connect unit (Z) according to claim 1,

characterized in that at least one of said space switching modules (B'_i) comprises:

K non-blocking switching matrices (F_i) with N/K inputs and P/C outputs, where K is an integer factor of N; and

P/C non-blocking switching matrices (G_i) with K inputs and one output, each of said K inputs being connected to a respective output of each of said K switches (F_i).

7.   (previously presented) A cross-connect unit (Z) according to claim 5, characterized in that said P/C switching matrices (G_i) are semiconductor optical amplifier (SOA) switches.

8.   (Original) A cross-connect unit (Z) according to claim 1, characterized in that said number N of input ports is equal to said number P of output ports.

9.   (Original) A cross-connect unit (Z) according to claim 5, characterized in that K is equal to C.

10.   (Original) A cross-connect unit (Z) according to claim 1, characterized in that said switching stage uses a technology based on $LiNbO_3$.

11.   (previously presented) A cross-connect unit (Z) according to claim 1, characterized in that each of said P/C outputs of said space switching modules (B_i, B'_i) is followed by an amplifier (D_S).

12.   (previously presented) A cross-connect unit according to claim 1, characterized in that the input of each divider is preceded by an amplifier (D_E).

13.   (previously presented) A cross-connect unit (Z) according to claim 1, characterized in that each of said space switching modules (B_i, B'_i) comprises:

a first stage comprising polarization-maintaining space switching matrices (M_1, ..., M_K); and

a second stage comprising polarization-maintaining semiconductor optical amplifiers ($MQWSOA_1$, ..., $MQWSOA_k$).

14.   (Previously Presented) A signal transmission system comprising a cross-connect unit (Z) according to claim 1 and characterized in that said system comprises:

at least one multiplexer for multiplexing M signals having M different wavelengths (λ_i)$_{1 \le i \le M}$, where M is an integer less than or equal to N;

at least one erbium-doped fiber amplifier (EDFA) for amplifying the multiplexed signal; and

at least one demultiplexer for demultiplexing the multiplexed signal to yield M demultiplexed signal that are input to M input ports of said cross-connect unit.

15.   (previously presented) A cross-connect unit (Z) according to claim 6, characterized in that said P/C switching matrices (G_i) are semiconductor optical amplifier (SOA) switches.

16.   (previously presented) The cross-connect unit of claim 1, wherein said number of

dividers is less than N.